

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  <b>INFORMATION DISCLOSURE STATEMENT</b> (Use several sheets if necessary)	ATTY. DOCKET NO. 110199.405USPC	APPLICATION NO. 10/568,654
	APPLICANTS Michael Patrick Murphy et al.	
	FILING DATE February 22, 2007	GROUP ART UNIT 1636

### U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA	3,532,667	10/06/70	Singh et al.	524	99	
	AB	6,133,322	10/17/00	Rustin et al.	514	689	
	AC	2002-0052342	05/02/02	Murphy et al.	514	75	
	AD	2003-0069208	04/10/03	Murphy et al.	514	75	
	AE	2004-0106579	06/03/04	Murphy et al.	514	75	
	AF	2006-0229278	10/12/06	Taylor et al.	514	58	
	AG	2007-0270381	11/22/07	Murphy et al.	514	100	
	AH	2008-0161267	07/03/08	Taylor et al.	514	58	
	AI	2008-0275005	11/06/08	Murphy et al.	514	100	
	AJ						
	AK						
	AL						
	AM						
	AN						
	AO						
	AP						

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### FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION	
					YES	NO
	BA	0 289 223 A1	11/2/88	EP		
	BB	5356036 B1	04/07/93	EP		
	BC	549366	04/15/98	EP		
	BD	59-39855	03/05/84	JP (+English Abstract)		
	BE	5-310763	11/22/93	JP (English Abstract Only)		
	BF	7-223991	08/22/95	JP (+English Abstract)		
	BG	8-239340	09/17/96	JP (+English Abstract)		
	BH	09-278770	09/29/06	JP (+English Abstract)		
	BI	513547	01/07/03	NZ		
	BJ	91/19815 A1	12/26/91	PCT		
	BK	95/26973 A1	10/12/95	PCT		
	BL	03/016323	02/27/03	PCT		
	BM	05/019232 A1	03/03/05	PCT		
	BN	99/026582 A2	6/3/99	PCT		
	BO	99/026954 A1	06/30/99	PCT		
	BP	03/065882 A2	08/14/03	PCT		
	BQ					
	BR					

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**OTHER PRIOR ART** (Including Author, Title, Date, Pertinent Pages, Etc.)

CA	Burns, R., et al., "Labeling Of Mitochondrial Proteins In Living Cells By The Thiol Probe Thiobutyltriphenylphosphonium Bromide," Arch. Biochem. Biophys., 339(1):33-9, March 1, 1997.
CB	Burns, R., et al., "Synthesis and Characterization Of Thiobutyltriphenylphosphonium Bromide, A Novel Thiol Reagent Targeted To The Mitochondrial Matrix," Arch. Biochem. Biophys., 322(1):60-8, September 10, 1995.
CC	Chen, L.B., "Mitochondrial Membrane Potential in Living Cells," Annual Review of Cell Biology, 4:155-181, November 1988.
CD	Coulter et al., Mitochondrially targeted antioxidants and thiol Reagents, Free Radical Biology & Medicine (2000), 28(10), 1547-1554.
CE	Davey, G.P., et al., "Uptake and accumulation of 1-methyl-4-phenylpyridinium by rat liver mitochondria measured using an ion-selective electrode," Biochem J., 288(Pt 2): 439-443, 1992 December 1, 1992.
CF	Dean, W., et al. "Mitochondrial Nutrition, Aging and Cognition," Smart Drug News (5)2, August 1, 1996.
CG	Ernster, L. et al., "The mode of action of lipid-soluble antioxidants in biological membranes: relationship between the effect of ubiquinol and vitamin E as inhibitors of lipid peroxidation in submitochondrial particles," BioFactors 3(4): 241-248 1992.
CH	Everett, S., et al., "Scavenging Of Nitrogen Dioxide, Thiyl, And Sulfonyl Free Radicals By The Nutritional Antioxidant Beta-Carotene," J. Biol. Chem., 271(8):3988-94, February 23, 1996.
CI	Goto, G., et al., "A Facile Synthesis of 1,4-Benzoquinones Having a Hydroxyalkyl Side Chain," Chem Pharm Bull (Tokyo), 33(10):4422-31, 1985, cited by other.
CJ	Grisar, J. Martin et al., "Cardioselective ammonium, phosphonium, and sulfonium analogues of alpha-tocopherol and ascorbic acid that inhibit in vitro and ex vivo lipid peroxidation and scavenge superoxide radicals," J Med Chem. 38(15):2880-6, July 21, 1995.
CK	James, A.M. et al., "Antioxidant and prooxidant properties of mitochondrial coenzyme Q," Arch. Biochem. Biophys. 423, 47-56, 2004.
CL	Jauslin, M. L., et al., "A cellular model for Friedreich Ataxia reveals small-molecule glutathione peroxidase mimetics as novel treatment strategy," Human Molecular Genetics, 11(24):3055-3063, 2002.

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DA	Jauslin, M., et al., "Mitochondria-Targeted Antioxidants Protect Friedreich Ataxia Fibroblasts From Endogenous Oxidative Stress More Effectively Than Untargeted Antioxidants," <i>FASEB J.</i> , 17(13):1972-4, October 2003.
DB	Kamo, N. et al., "Membrane potential measured with an electrode sensitive to tetraphenylphosphonium and relationship," <i>J Membr. Biol.</i> , 49:105-121, 1979.
DC	Keinan, E. et al., "Total synthesis of linear polyprenoids. II: Improved preparation of the aromatic nucleus of ubiquinone," <i>J. Org. Chem.</i> 52(17) 3872-3875, 1987.
DD	Kelso, G., et al., "Prevention Of Mitochondrial Oxidative Damage Using Targeted Antioxidants," <i>Ann. NY Acad. Sci.</i> , 959:263-74, April 2002.
DE	Koyama, Mayumi, et al., "Synthesis of Fluorine Analogs of Vitamin E. II. Synthesis of 2-(3-chloropropyl)-2,5,7,8-tetramethyl-6-chromano and its application for stereocontrolled Witting reaction and trifluoromethyl ketones," <i>Chemical and Pharmaceutical Bulletin</i> , 36(8):2950-2954, 1988.
DF	Masaki, N. et al., "Mitochondrial Damage as a Mechanism of Cell Injury in the Killing of Cultured Hepatocytes by tert-Butyl Hydroperoxide," <i>Archives of Biochemistry and Biophysics</i> , 270(2): 672-680, May 1, 1989. (Abstract only)
DG	Masaki, N., et al., "Intracellular Acidosis Protects Cultured Hepatocytes From The Toxic Consequences Of A Loss Of Mitochondrial Energization," <i>Arch Biochem Biophys.</i> , 272(1):152-61, July 1989. (Abstract only)
DH	McKittrick et al., "Synthesis of the Yeast Antioxidant Benzofuran and Analogs," <i>J. Chem. Soc. Perkin Trans.</i> , 1:709-712(721?), 1984.
DI	Okamoto, K., et al., "Synthesis of quinones having carboxy- and hydroxy-alkyl side chains, and their effects on rat-liver lysosomal membrane," <i>Chem Pharm Bull (Tokyo)</i> . Aug. 1982; 30(8):2797-819.
DJ	Rottenberg H., "The measurement of membrane potential and $\Delta\text{pH}$ in cells, organelles, and vesicles," <i>Methods Enzymol.</i> , 55:547-569, 1979.

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Date: April 24, 2009

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EA	Sakamoto, K. et al., "Role of the isoprenyl tail of ubiquinone in reaction with respiratory enzymes: studies with bovine heart mitochondrial complex I and Escherichia coli bo-type ubiquinol oxidase," <i>Biochemistry</i> 37(43), 15106-15113, October 27, 1998.
EB	Smith, Robin A.J., et al. "Targeting Coenzyme Q Derivatives to Mitochondria," <i>Methods in Enzymology; Quinones and Quinone Enzymes, Part B</i> , 382: 45-67, 2004.
EC	Smith, Robin, A.J. et al., "Selective targeting of an antioxidant to mitochondria," <i>European Journal of Biochemistry</i> , 263:709-716, 1999.

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